

## An Unusual Bisexual *Agathis* Cone

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BISEXUAL CONES have been observed in many genera of the Coniferae. Normally such a cone consists of a functional male strobilus with several ovulate scales at the distal end. This configuration has been found in *Pinus*, *Picea*, *Pseudotsuga*, *Juniperus*, *Sequoia*, and *Abies* (Jack, 1895; Coulter and Chamberlain, 1910; Littlefield, 1931; Mergen and Koerting, 1957; Mergen, 1963). According to Chamberlain (1935:279), cases have been reported in which the base was female and the tip male, but he cites no examples or references. Perhaps the only published report of such a cone is Pauley's description (1942:62) of a single bisexual strobilus of *Picea glauca* (Moench) Voss.<sup>2</sup>

A fallen bisexual cone of Queensland kauri (*Agathis brownii* [Lemaire] L. H. Bailey) was found in May, 1964 at the nursery of the Hawaii Forestry Division at Hilo, Hawaii. It was female at the base and male at the tip (Fig. 1). Examination of several thousand other fallen male cones from 25 trees failed to turn up another that was in any way anomalous. Such cones are fairly common, however, on some Queensland kauris growing in Honolulu.<sup>3</sup>

The genus *Agathis* is native to Australia, New Zealand, New Caledonia, Fiji, the Philippines, and the Malay Peninsula. Dallimore and Jackson (1961:176-177) placed it in the Araucarinae Tribe of the Pinaceae.

Though female at the base, this bisexual cone lacked the persistent stalk of the normal seed cone (Fig. 1). It was cast in the same way as were the normal male strobili. When examined under low magnification, the cone showed ap-

parently normal development of both the ovulate and the staminate scales. Pollen was almost ready to be shed, and many ovules had developed into immature seeds with well-defined wings.

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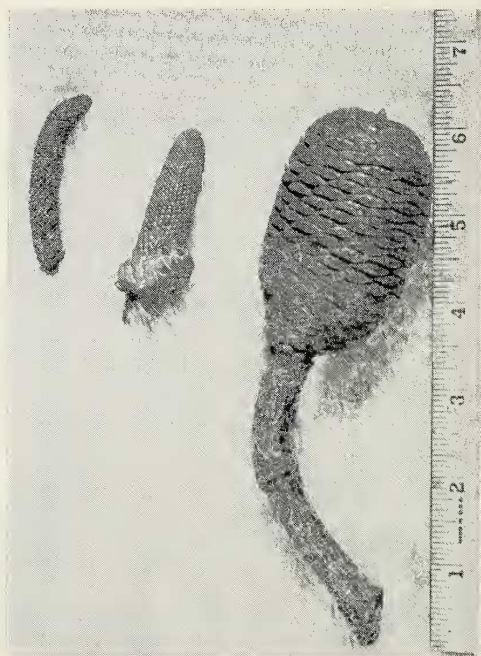


FIG. 1. Normal and bisexual cones of Queensland kauri compared. *Left to right*: normal male strobilus just after pollen shedding; bisexual cone; immature female cone. Scale is in inches.

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<sup>2</sup> An account of similar cones on *Picea smithiana* Boiss. by Santamour (1959) was noticed after submission of this article.

<sup>3</sup> Personal correspondence with R. K. LeBarron, Hawaii Forestry Division, Honolulu, Hawaii, June 2, 1964, and examination of his specimens.

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